

Sodium Azide-related chemical burn after air-bag deployment

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Explosive property of Sodium Azide (N_3Na) is commonly exploited to expand air-bag in automotive industry. Cases of cutaneous burns have been reported secondary to air-bag deployment. In most cases, direct imputability to N_3Na has not been clearly established. Indeed, other physiopathological processes cannot be excluded in this context, particularly thermic burn and direct mechanical shock.

In this abstract, we report a Sodium Azide-related ocular burn after a car collision with air-bag inflation.

Case report

A 37-year-old man was involved in a road traffic accident with air-bag deployment. He was admitted in emergency department for thoracic and facial trauma.

Symptoms of acute alcoholisation with anxiety and inspiratory dyspnea were found during clinical examination. This exam also revealed a palpebral hematoma with bilateral subconjunctival hemorrhage and ocular burning sensation. No thoracic or facial injury was confirmed after complementary exams.

ECG showed a normal sinus rhythm at 74 beats/min.

Initial biological analyses exhibited :sodium 146 mEq.L^{-1} ; Chlorine 105 mEq.L^{-1} , Potassium 3.4 mEq.L^{-1} , glycemia 0.68 g.L^{-1} ; urea 6.4 mmol.L^{-1} ; creatinine $76 \text{ } \mu\text{mol.L}^{-1}$; CRP $<3 \text{ mg.L}^{-1}$ and a blood alcohol rate of 2.76 g.l^{-1} .

At D+4, CRP has reached to 48.2 mg.l^{-1} .All other biological values were within normal values. The presence of N_3Na in the waste water from head irrigation was revealed by a characteristic yellow coloration in reaction to the addition of an hydrochloric solution of Fe(III) cations (wavelength of maximal absorption: 460nm) .

Treatment (management): water decontamination (abundant water irrigation), supplemental oxygen, and ophthalmic treatment associating artificial tears (Carmellose) and healing (Citacic®).

Evolution: resolution of ophtalmological lesions. Meanwhile the patient was admitted in a psychiatric department to manage his alcohol addiction.

Discussion: We report an azide cutaneous-mucosal-induced contamination resulting from the incomplete decomposition of this compound. This reaction provoked an ocular chemical burn and airway irritation associated with dyspnoea and inflammatory syndrom at D₊₄ (CRP 48 mg.L^{-1}).

Conclusion: The contamination of the car indoor environment by Azide has resulted in an ocular chemical burn with an airway irritation. Management of such exposition is symptomatic and involves abundant water decontamination.

Finally, special attention must be given to a potential Sodium Azide exposure in the context of emergency management of car collision with air-bag deployment .